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APPLICATION NUMBER: 60/506,470

FILING DATE: September 25, 2003

RELATED PCT APPLICATION NUMBER: PCT/US04/31288

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Certified by



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# PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. EV318285010US

INVENTOR(S)					
Given Name (first and middle (if any))		Family Name or Surname		Residence (City and either State or Foreign Country)	
John D.		Mize		Spokane Valley, Washington	
Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages <u>7</u>		<input type="checkbox"/> CD(s), Number _____			
<input type="checkbox"/> Drawing(s) Number of Sheets _____		<input checked="" type="checkbox"/> Other (specify) <u>2 return receipt postcards</u>			
<input type="checkbox"/> Application Date Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.				FILING FEE Amount (\$)	
<input checked="" type="checkbox"/> A check or money order is enclosed to cover the filing fees.				160.00	
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<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.					
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
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[Page 1 of 2]

Respectfully submitted,

SIGNATURE

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Date September 25, 2003

REGISTRATION NO. 48,711

(if appropriate)

Docket Number: H0006253

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EV318285016

If the treated component has threads, bosses or other parts that are to be protected during the chemical treatment and/or during the bead blasting, one or more appropriate protective coverings can be provided over such parts prior to the chemical treatment and/or prior to the bead blasting.

The invention can be utilized to treat, for example, 200mm and 300mm Ta coils.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**PROVISIONAL PATENT APPLICATION**

\* \* \* \* \*

**METHODS OF CLEANING AND REUSING TANTALUM  
COMPONENTS**

\* \* \* \* \*

**INVENTOR**

John D. Mize

ATTORNEY'S DOCKET NO. H0006253

Removing the TaN from Ta coils (or other components) could allow customers to reuse the coils(or other components) at least once. This is a method to remove the TaN from Ta coils(or other components) used in PVD TaN processes.

The invention includes a process for removing TaN from a Ta surface of a component. Once the TaN is removed the component (such as, for example, a coil) can then be reinstalled and reused in a sputtering chamber.

A spent component (i.e., a Ta component coated with TaN) is received. The component is treated with hydrofluoric acid (HF), subsequently treated with bead blasting, and then again treated with HF. The second HF treatment is conducted until there is little to no detectable bubbling of the acid. It appears that the bubbling is present while the TaN is present, and accordingly that cessation of bubbling indicates removal of TaN. The HF treatment can utilize a solution comprising about 33% HF (by volume) in water. The initial HF treatment can be preceded by degreasing of the component (utilizing, for example, alkali soap), and rinsing of the degreased component. The initial HF treatment can be followed by a water rinse and subsequent drying (utilizing, for example, dry stream of N<sub>2</sub>) prior to the bead blasting. The final HF treatment can be preceded by an appropriate rinse (such as a water rinse), and can be followed by a water rinse and subsequent drying and, if appropriate, packaging. The bead blasting can utilize 16-24 grit Al<sub>2</sub>O<sub>3</sub>. The first HF treatment, bead blasting and second HF treatment can be together considered to comprise a three step process for treating a Ta-containing component for removing TaN from a surface of the component.



# **Ta Coil Refurbishment**

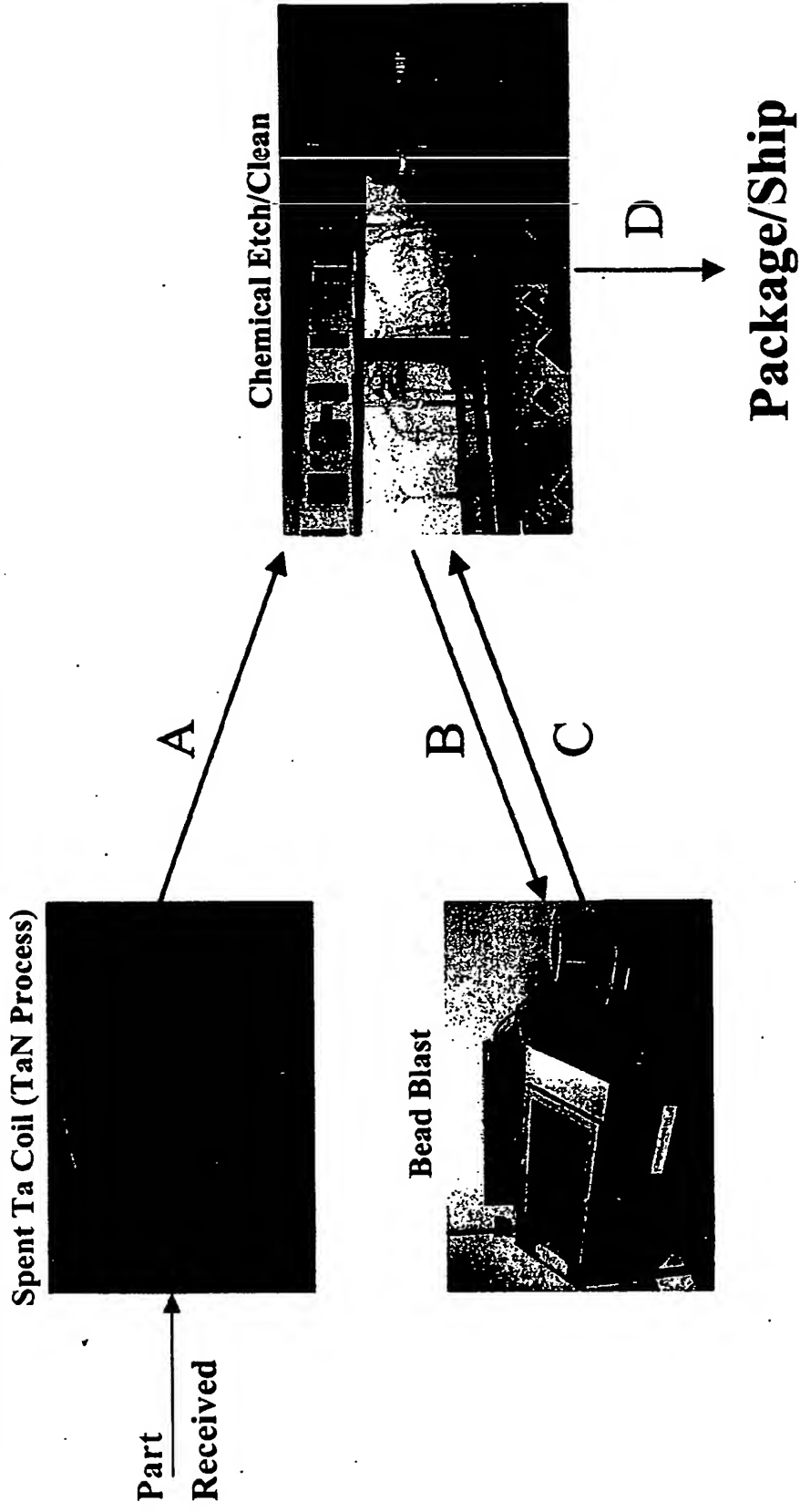
## **TaN Removal**

**9-3-03**

**Honeywell**

OEM/Metals Group

# Ta Coil Refurbishment Process



# 300mm Ta Coil Images - Ra~380 $\mu$ -inches

Coil

ID



Rough Surface

Coil

OD



Coil  
Boss/OD



**Honeywell**

OEM/Metals Group



# Ta Surface Cross Sections ~2000kWh

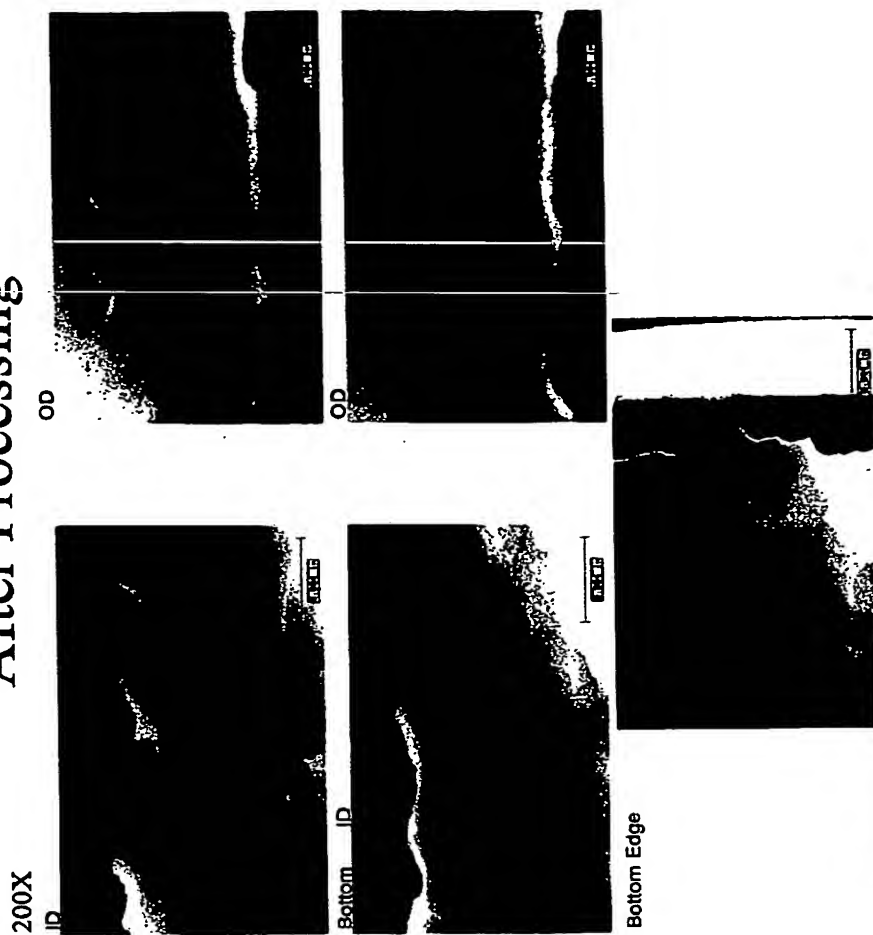


'As Is'

TaN Detected



No TaN Detected  
After Processing



Honeywell

OEM/Metals Group

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